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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,275	02/02/2004	Isamu Namose	15.81/5796	2224

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EXAMINER	
LUND, JEFFRIE ROBERT	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/770,275	NAMOSE, ISAMU	
	Examiner	Art Unit	
	Jeffrie R. Lund	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *1-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6, 9, and 12-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wofford et al, US Patent 5,750,823.

Wofford et al teaches an apparatus for processing PFC gases (hexafluoroethane (C_2F_6) and tetrafluoromethane (CF_4) found in low pressure waste streams produced during semiconductor etching and deposition processes for manufacturing electronic devices that includes: a waste stream inlet pipeline 1; a vacuum pump 2; a reactive material supply section 7 for supplying a paraffin hydrocarbon (CH_4) or O_2 into the waste stream; a plasma process section 12 downstream from the reactive supply section 7; and a cyclone collector 13 downstream of the plasma process section of the collection of the polymer created by the plasma process section. The plasma process section 12 is located on the atmospheric pressure side of the vacuum pump 2. (Entire document)

It is inherent that the low pressure waste streams produced during semiconductor etching and deposition processes for manufacturing electronic devices are formed in an etching or deposition processing chamber.

Alternately, it would be obvious to connect the waste stream inlet pipeline, which supplies the waste streams produced during semiconductor etching and deposition processes for manufacturing electronic devices, to a processing chamber in which the etching and deposition methods are carried out.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wofford et al, US Patent 5,750,823, in view of Rizzie et al, US Patent 5,720,165.

Wofford et al was discussed above.

Wofford et al differs from the present invention in that Wofford et al does not teach that the cyclone collector with sloped side walls, an upper gas port, includes a pair of open/close partitions at the bottom of the cyclone collector for the simultaneous deposition and recovery of the polymer, or that the partitions are hinged.

Rizzie et al teaches a standard cyclone collector 104 that includes sloped sidewalls 96, an upper gas port 86, 186, and two open/close partitions 109 for the simultaneous deposition and recovery of ash. (Entire document)

Hinging a partition to enable it to open and close is well known, and commonly used in the art.

The motivation for adding the sidewalls, gas ports, and the two open/close partitions of Rizzie et al is to the provide the generically described cyclone collector of Wofford et al with a specific structure.

The motivation for hinging the open/close portions is to provide an opening means to enable the partitions to open and close.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the sidewalls, gas ports, and the two open/close partitions of Rizzie et al to the cyclone collector of Wofford et al, and to make the partitions hinged.

5. Claims 7, 8, 10, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wofford et al, US Patent 5,750,823, in view of Herman et al, US Patent 6,261,524 B1.

Wofford et al was discussed above.

Wofford et al differs from the present invention in that Wofford et al does not teach a gas inlet for injecting hydrogen coupled to the system after the plasma process section or supplying CH_3OH (methanol) or C_2H_5OH (ethanol).

Herman et al teaches a PFC abatement system that includes using hydrogen, methanol, and ethanol as reactive materials supplied to the process

chamber, and that gases can be injected into the fluid stream at the entrance, exit, or multiple locations in between. (Figures, column 4 lines 1-25)

The motivation for using methanol or ethanol as reactive material supplied to the plasma process section of Wofford et al is to provide an alternate reactive gas source from which to react with the PFC as taught by Herman et al. The motivation for adding hydrogen via a gas inlet after the plasma process section is to provide an additional reactive material to the waste stream after the plasma process section to provide the "optimum chemistry and stoichiometry" of the reaction as taught by Herman et al (column 4 line 10) or to provide a carrier gas to ensure the proper of gas through the cyclone collector.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use methanol or ethanol in the plasma process section of Wofford et al, and to supply hydrogen via an inlet after the plasma process section of Wofford et al as taught by Herman et al.

6. Claims 1-4, 6, 9, and, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shang et al, US Patent 6,055,927, in view of Wofford et al, US Patent 5,750,823.

Shang et al teaches a processing chamber 10 connected to a vacuum pump 36 and a burn box 66 for treating waste gases at atmospheric pressure. The processing chamber uses common halogen compounds.

Shang et al differs from the present invention in that Shang et al does not teach using PFC or a waste system that includes a reactive material supply, a plasma process section, or a cyclone collector.

Wofford et al was discussed above.

The motivation for using PFC gases in the apparatus of Shang et al is to enable Shang et al to perform different etching or cleaning methods such as ashing. The motivation for replacing the burn box of Shang et al with the plasma treatment system of Wofford et al is to provide a waste treatment system that is more efficient in treating PFC waste gases as taught by Wofford et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use PFC gases in the processing chamber and to replace the waste gas treatment system of Shang et al as taught by Wofford et al.

7. Claims 5 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shang et al and Wofford et al as applied to claims 1-4, 6, 9, and 12-14 above, and further in view of Rizzie et al, US Patent 5,720,165.

Shang et al and Wofford et al differ from the present invention in that they do not teach that the cyclone collector with sloped side walls, an upper gas port, includes a pair of open/close partitions at the bottom of the cyclone collector for the simultaneous deposition and recovery of the polymer, or that the partitions are hinged.

Rizzie et al teaches a standard cyclone collector 104 that includes sloped sidewalls 96, an upper gas port 86, 186, and two open/close partitions 109 for the simultaneous deposition and recovery of ash. (Entire document)

Hinging a partition to enable it to open and close is well known, and commonly used in the art.

The motivation for adding the sidewalls, gas ports, and the two open/close partitions of Rizzie et al is to the provide the generically described cyclone collector of Shang et al and Wofford et al with a specific structure.

The motivation for hinging the open/close portions is to provide an opening means to enable the partitions to open and close.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the sidewalls, gas ports, and the two open/close partitions of Rizzie et al to the cyclone collector of Shang et al and Wofford et al, and to make the partitions hinged.

8. Claims 7, 8, 10, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shang et al and Wofford et al as applied to claims 1-4, 6, 9, and 12-14 above, and further in view of Herman et al, US Patent 6,261,524 B1.

Shang et al and Wofford et al differ from the present invention in that they does not teach a gas inlet for injecting hydrogen coupled to the system after the plasma process section or supplying CH_3OH (methanol) or C_2H_5OH (ethanol).

Herman et al teaches a PFC abatement system that includes using hydrogen, methanol, and ethanol as reactive materials supplied to the process chamber, and that gases can be injected into the fluid stream at the entrance, exit, or multiple locations in between. (Figures, column 4 lines 1-25)

The motivation for using methanol or ethanol as reactive material supplied to the plasma process section of Shang et al and Wofford et al is to provide an alternate reactive gas source from which to react with the PFC as taught by Herman et al. The motivation for adding hydrogen via a gas inlet after the plasma

process section is to provide an additional reactive material to the waste stream after the plasma process section to provide the "optimum chemistry and stoichiometry" of the reaction as taught by Herman et al (column 4 line 10) or to provide a carrier gas to ensure the proper of gas through the cyclone collector.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use methanol or ethanol in the plasma process section of Wofford et al, and to supply hydrogen via an inlet after the plasma process section of Shang et al and Wofford et al as taught by Herman et al.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
4/3/05